## REMARKS/ARGUMENTS

Claims 1-31 are pending in the application. Claim 28 stands rejected under 35 U.S.C. § 102(e) as anticipated by Kan. The remaining claims stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kan in view of various combinations of Chiba, Miyagawa, Ohba, Kitai, Endo, Miguelez, and Richardson.

In response to the action, claims 1 and 10 have been amended. Claims 28–31 have been cancelled. New claims 32–34 have been added. Reconsideration of the claims in view of the amendments and the following remarks is respectfully requested.

**§ 112 Rejection and Claim Objections**

Claim 26 and claim 17 have been amended to correct the problems noted in the action. In view of these corrections, the Applicants respectfully request that the rejection of these claims be withdrawn.

**§ 103 Rejections**

Pending claims 1–27 have been rejected under 35 USC § 103 as unpatantable over Kan in view of various other references. Reconsideration of these claims in view of the amendments and the following remarks is respectfully requested.

Claim 1, as amended, recites a method for marking a target media using a microlaser which, upon reaching an absorbed power saturation threshold, emits a high peak power pulse of light. The method includes the steps of driving the microlaser at a simmer power level selected to maintain the microlaser below the saturation threshold and to limit the activation time of the microlaser, directing the microlaser at the target media on which the mark is to be made, and increasing the power applied to the microlaser to the saturation threshold to cause the microlaser to emit a pulse of light for forming the mark. During the simmer mode, a current, voltage, and temperature of the microlaser are monitored to maintain the microlaser

at predetermined power levels. The feedback monitoring allows the power level to be maintained within very specific tolerance ranges over long simmer time periods, therefore maintaining tight tolerance on the size of the pulse formed, and allowing significant control over the size of the mark, which is very important in providing quality print functions.

Kan discloses a method for controlling a laser in which the laser is maintained at a level below saturation during a first time period, and is driven above saturation in a second time period to provide a pulse output. A controller 42 controls the level of the current applied to the laser to drive the laser below and above the saturation values. The preferred time periods for the first and second periods are described as between 100 and 500 microseconds and 1 to 10 microseconds (paragraph 35), and these times can be adjusted to control "constant oscillation intervals" (paragraph 44). Kan, therefore, discloses a system in which the intervals between pulses are short, and intended to provide ongoing oscillations at defined periods. The control system merely adjusts the current levels to change state.

Kan, therefore, provides a simple control system for providing pulses over very short intervals. Kan does not disclose, teach, or suggest the use of the laser for printing applications, or the process of monitoring voltage, temperature, or current feedback during the below saturation stage, as recited in the amended claim. As none of the other references teach or suggest maintaining a laser at a level below saturation, these references cannot disclose the step of monitoring feedback during this stage of operation. Therefore, the cited references do not disclose all of the elements of claim 1, as amended, and the Applicants respectfully request that the rejection of claim 1 and associated dependent claims be allowed.

Claim 10, as amended, recites a laser marking/imaging system comprising a passively Q-switched microlaser having a saturable absorber which, upon reaching a saturation power threshold, emits a pulse of light through an optical output. Control circuitry is electrically

connected to the microlaser to monitor a current, a voltage, and a temperature feedback and to maintain the microlaser in a simmer mode below the saturation power threshold when not providing a mark, and for driving the microlaser to the saturation power threshold to emit a pulse of light when a mark is required. A photodiode is electrically coupled to the microlaser to provide feedback when the microlaser is activated to monitor the repetition rate of the microlaser.

As discussed above, maintaining repeatable control over the power level of the microlaser in the below saturation or simmer state is very important in providing consistently sized pulses, and therefore for providing a quality and repeatable print. The printing device of claim 10 provides this control by monitoring the voltage, current, and temperature feedback in the simmer mode. The photodiode recited in claim 10, moreover, provides additional control for the printing process by verifying the timing and size of the produced mark.

Also as discussed above, the Kan reference does not disclose monitoring any feedback during the time period when the laser is maintained below a saturation level. Kan, moreover, does not teach or suggest that the resultant pulses can be used for printing or marking. None of the remaining references teach or suggest maintaining the laser below the saturation level. Therefore, claim 10, as amended, is believed to differentiate over the cited references, and the Applicants respectfully request that the rejection of claim 10 and associated dependent claims be allowed.

**New Claims**

New claims 32–34 provide a method for marking a target media using a microlaser which, upon reaching an absorbed power saturation threshold, emits a high peak power pulse of light. The method comprises the steps of driving the microlaser at a simmer power level

selected to maintain the microlaser below the saturation threshold and to limit the activation time of the microlaser, and monitoring a current, a voltage, and a temperature feedback and adjusting the power applied to the microlaser to maintain the microlaser at a predetermined power level. These steps are continually repeated until a command is received to form a mark. A microlaser is then directed at the target media on which the mark is to be made, and the power is increased to cause the microlaser to emit a pulse of light for forming the mark. The applied power is then decreased to the simmer level after the mark is formed and the user returns to monitoring feedback and input commands until a command for another mark is formed.

None of the cited references disclose a method in which a laser is maintained below a saturation level for an indeterminate period of time pending a command to print. None of the cited references, moreover, disclose a simmer mode in which voltage, current, and temperature feedback are continually controlled, or the use of a "simmer mode" during a printing or marking process. Therefore, new claims 32–34 are believed patentable over the cited references and the Applicants respectfully request that a notice of allowance for these claims be issued.

**Conclusion**

In view of the foregoing amendments and remarks, the Applicants submit that the application is in condition for allowance, and respectfully request that a notice of allowance for claims 1–27 and 32–34 be issued.

A two month extension is believed necessary in accordance with this response. A check for these fees is closed. Please charge any other fees under 37 CFR § 1.17 that may be due on this application to Deposit Account 17-0055. The Commissioner is also authorized to treat this amendment and any future reply in this matter requiring a petition for an extension

of time as incorporating a petition for extension of time for the appropriate length of time as provided by 37 CFR § 136(a)(3).

Respectfully submitted,

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Dated January 3, 2007

By: ______________________

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